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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,331	02/13/2006	Robert Bruce Grant	M03B170	7605

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EXAMINER	
KAUR, GURPREET	
ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
02/26/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/568,331	GRANT, ROBERT BRUCE	
	Examiner	Art Unit	
	GURPREET KAUR	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) *15-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 27-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/13/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. Claims 1-3, 5-49 are pending

Claim 4 is cancelled.

Claims 15-26 are withdrawn.

Claims 1-3, 5-14 and 27-49 are being examined in this application.

Election/Restrictions

2. Applicant's election without traverse of claims 1-14 and 27-49 in the reply filed on 11/12/2009 is acknowledged.

Specification

3. The disclosure is objected to because of the following informalities: The specification needs to open with a paragraph stating that this application is a 371 National Stage application for PCT/GB04 filed on 9/23/2004.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 6-9, 13, 14, 27, 28, 35, 37, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Brosda et al. (U.S. Pat. No. 6,355,151).

Regarding claims 1 and 2, Brosda disclose an organic contaminant molecule sensor (propane) comprising an electrochemical cell (see figure 2) comprising:

a solid state anion conductor 1 made out of zirconia, which the present invention evidences inherently possesses a oxygen anion critical temperature (specification page 3, lines 31 over page 4, lines 3);

measurement electrodes (2, 2a) formed on a first surface of the conductor where the electrodes are constructed of platinum and platinum alloys (see col. 4, lines 42-45) which are inherently capable of catalyzing the dehydrogenation of an organic contaminant (as evidenced by applicant's claim 2);

a reference electrode 9 formed on a second surface of the conductor (see figure 3) for exposure to a reference environment (see col. 2, lines 8-13). Brosda teaches that oxygen is measured according to Nernst probe principle (see col. 2, lines 62-65) which as evidenced by the present invention inherently dissociate oxygen to oxygen ion at the reference electrode, thus reference electrode is made up of material which dissociate oxygen to oxygen ion;

a heating element (see col. 2, lines 51-53);

a current source for controlling the electrical current flowing between the reference electrode and each of the measurement electrodes (U_{p1}, U_{p2}) which would inherently control the flux of oxygen anions flowing between the reference electrode and each of the measurement electrode (See fig. 2 and col. 4, line 34 - col. 5, line 7)

5. Regarding claim 6, Yttria is a conventional stabilization agent for zirconia (see col. 2, lines 38-40).

6. Regarding claim 7, the counter electrode 9' is placed adjacent to the reference electrode 9 (see figure 3).

7. Regarding claim 8, Brosda teaches that reference electrode 9' is interchangeably used as counter electrode (see col. 5, lines 15-16). Therefore, as taught above in claim 1, reference electrode dissociate oxygen according to Nernst probe, thus counter electrode which is comprised of same material as reference electrode inherently is capable of dissociating oxygen.

8. Regarding claims 9 and 42, the reference environment is air (see col. 3, lines 53-55).

9. Regarding claims 13, 27 and 41, the potential is measured across the measuring electrode and reference electrode (see col. 3, lines 43-50 and figure 1).

10. Regarding claims 14 and 28, the claim does not further define the actual sensor.

11. Regarding claims 35 and 37, measurement electrodes (2, 2a) formed on a first surface of the conductor where the electrodes are constructed of platinum and platinum alloys (see col. 4, lines 42-45)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 3, 5 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 1 above, and further in view of Inaba et al. (U.S. 2003/0121801) .

Regarding claim 3, Brosda teaches measuring electrode comprised of platinum and platinum alloys (see col. 3, lines 11-12 and 24-26) but does not indicate alloys include element selected from group of silver, gold and copper.

However, Inaba et al. teaches a gas sensor wherein Pt-Au alloys have high activity to hydrocarbons (flammable gas) (see paragraph 0012).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to use the Pt-Au alloy of Inaba as a choice alloy for the platinum alloy taught by Brosda because Pt-Au alloys have high activity to hydrocarbons.

13. Regarding claims 5, Brosda teaches the reference electrode 9 formed on a second surface of the conductor (see figure 3) for exposure to a reference environment (see col. 2, lines 8-13). Brosda teaches that oxygen is measured according to Nernst probe principle (see col. 2, lines 62-65) which as evidenced by the present invention inherently dissociate oxygen to oxygen ion at the reference electrode, thus reference electrode is made up of material which dissociate oxygen to oxygen ion.

14. Regarding claim 45, Brosda teaches reference electrode is capable of dissociating oxygen but does not teach reference electrode is comprised of either platinum or palladium. However, Inaba et al. teaches platinum reference electrode being used in determining oxygen concentration (see paragraph 0100) and therefore would have been obvious choice of material for the reference electrodes of Brosda.

15. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 8 above, and further in view of Inaba et al. (U.S. 2003/0121801) .

Brosda teaches reference electrode is capable of dissociating oxygen but does not teach reference electrode is comprised of either platinum or palladium. However, Inaba et al. teaches platinum reference electrode being used in determining oxygen concentration (see paragraph 0100) and therefore would have been obvious choice of material for the reference electrodes of Brosda.

16. Claims 10-12, 29 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 1 above, and further in view of Gur et al. (U.S. Pat. No. 5,827,415) .

Regarding claims 10, 11 and 47, Brosda teaches second measuring electrode comprised of metal oxides (see col. 3, lines 28-30) but does not state solid state as source of oxygen.

However, Gur teaches an oxygen sensor wherein the metal-metal oxide binary mixture is used as self-contained oxygen reference electrode (see col. 3, lines 6-7 and 25-26) to avoid the need for gas-tight sealing and leakage between the measuring electrode chamber and the reference electrode chamber (see col. 2, lines 61-col. 3, lines 1-11).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to modify the reference electrode of Brosda with reference electrode composed of metal-metal oxide mixture as taught by Gur because reference electrode composed of metal-metal oxide binary mixture can avoid the need for gas-tight sealing

and prevent leakage between the measuring electrode chamber and the reference electrode chamber (see col. 2, lines 61-col. 3, lines 1-11).

17. Regarding claim 12, Brosda teaches sensor comprising heater but does not teach heater further includes thermocouple assembly.

However, Gur teaches an oxygen sensor with heater and a thermocouple attachment for accurate temperature monitoring (see col. 4, lines 48-54).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to incorporate thermocouple attachment of Gur into the sensor assembly of Brosda to accurately monitor the temperature of the sensor.

18. Regarding claim 29, Brosda teaches the measurement electrodes (2, 2a) formed on a first surface of the conductor where the electrodes are constructed of platinum and platinum alloys (see col. 4, lines 42-45).

19. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda and Gur as applied to claim 29 above, and further in view of Inaba et al. (U.S. 2003/0121801) .

Regarding claim 30, Brosda teaches measuring electrode comprised of platinum and platinum alloys (see col. 3, lines 11-12 and 24-26) but does not indicate alloys include element selected from group of silver, gold and copper.

However, Inaba et al. teaches a gas sensor wherein Pt-Au alloys have high activity to hydrocarbons (flammable gas) (see paragraph 0012).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to use the Pt-Au alloy of Inaba as a choice alloy for the platinum alloy taught by Brosda because Pt-Au alloys have high activity to hydrocarbons.

20. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 35 above, and further in view of Inaba et al. (U.S. 2003/0121801) .

Regarding claim 36, Brosda teaches measuring electrode comprised of platinum and platinum alloys (see col. 3, lines 11-12 and 24-26) but does not indicate alloys include element selected from group of silver, gold and copper.

However, Inaba et al. teaches a gas sensor wherein Pt-Au alloys have high activity to hydrocarbons (flammable gas) (see paragraph 0012).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to use the Pt-Au alloy of Inaba as a choice alloy for the platinum alloy taught by Brosda because Pt-Au alloys have high activity to hydrocarbons.

21. Claims 38-40 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 37 above, and further in view of Inaba et al. (U.S. 2003/0121801).

Regarding claim 38, Brosda teaches measuring electrode comprised of platinum and platinum alloys (see col. 3, lines 11-12 and 24-26) but does not indicate alloys include element selected from group of silver, gold and copper.

However, Inaba et al. teaches a gas sensor wherein Pt-Au alloys have high activity to hydrocarbons (flammable gas) (see paragraph 0012).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to use the Pt-Au alloy of Inaba as a choice alloy for the platinum alloy taught by Brosda because Pt-Au alloys have high activity to hydrocarbons.

22. Regarding claims 39 and 40, Brosda teaches the reference electrode 9 formed on a second surface of the conductor (see figure 3) for exposure to a reference environment (see col. 2, lines 8-13). Brosda teaches that oxygen is measured according to Nernst probe principle (see col. 2, lines 62-65) which as evidenced by the present invention inherently dissociate oxygen to oxygen ion at the reference electrode, thus reference electrode is made up of material which dissociate oxygen to oxygen ion.

23. Regarding claim 48, Brosda teaches reference electrode is capable of dissociating oxygen but does not teach reference electrode is comprised of either platinum or palladium. However, Inaba et al. teaches platinum reference electrode being used in determining oxygen concentration (see paragraph 0100) and therefore would have been obvious choice of material for the reference electrodes of Brosda.

24. Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 7 above, and further in view of Gur et al. (U.S. Pat. No. 5,827,415).

Regarding claim 31, Brosda teaches sensor comprising heater but does not teach heater further includes thermocouple assembly.

However, Gur teaches an oxygen sensor with heater and a thermocouple attachment for accurate temperature monitoring (see col. 4, lines 48-54).

Therefore it would be obvious to person of ordinary skill in the art at the time of the invention to incorporate thermocouple attachment of Gur into the sensor assembly of Brosda to accurately monitor the temperature of the sensor.

25. Regarding claim 32, Brosda teaches that the potential is measured across the measuring electrode and reference electrode (see col. 3, lines 43-50 and figure 1).

26. Regarding claim 33, the claim does not further define the actual sensor.

27. Regarding claim 34, Brosda teaches the reference electrode 9 formed on a second surface of the conductor (see figure 3) for exposure to a reference environment (see col. 2, lines 8-13). Brosda teaches that oxygen is measured according to Nernst probe principle (see col. 2, lines 62-65) which as evidenced by the present invention inherently dissociate oxygen to oxygen ion at the reference electrode, thus reference electrode is made up of material which dissociate oxygen to oxygen ion.

28. Claims 43, 44 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brosda as applied to claim 13 above, and further in view of Gur et al. (U.S. Pat. No. 5,827,415).

Regarding claims 43, 44 and 49, see claims 10 and 11 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GURPREET KAUR whose telephone number is (571)270-7895. The examiner can normally be reached on Monday-Friday (Alternate Friday Off), 8:00-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571)272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

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2/3/10